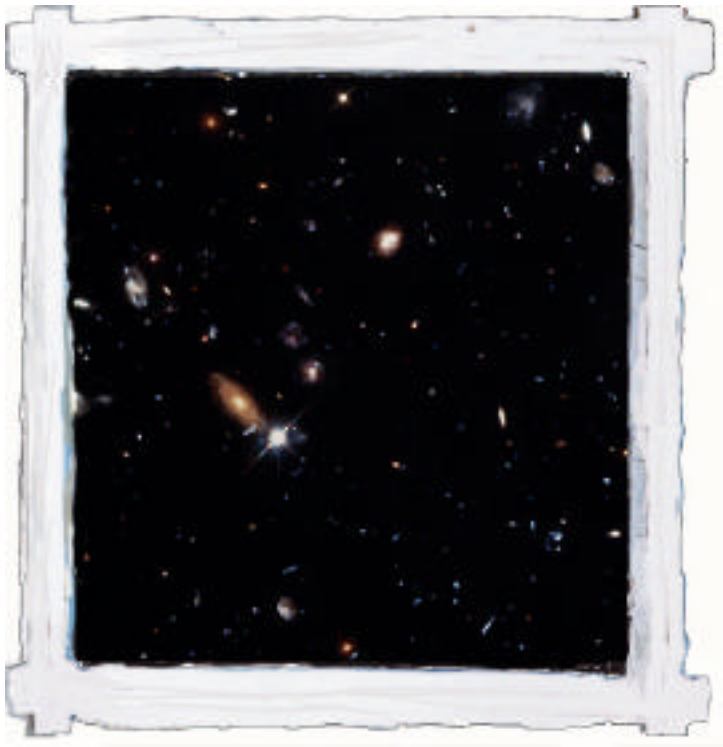
ORIGINS / NGST



THE NEXT GENERATION SPACE TELESCOPE

"Visiting a Time When Galaxies Were Young"
-from HST and Beyond, AURA

OTA Primary Mirror

Quarterly Review

Dave Jacobson, Larry Craig, Max Nein, Dick Cloyd

October 9, 1997

MSFC

- Activity Since Last Quarterly

  - Cleaned up beryllium design
    - Produced TM on Be results.
    - Produced Be on Be thermal results.

  - Began investigation of alternative glass design
    - 70 actuators/pedal with DM

    - Investigated minimum actuator density to support launch loads.

    - Began trade to investigate DM capability versus actuator density to correct for WFE.

    - Investigation of glass design initiated activity to investigate how the FEM handles these type elements.

      - Detailed analytical analysis kicked off to validate the FEM's way of dealing with thin shells(Toby Boulet-Utenn.)

- **Investigated UoA type glass design**

  - **Many actuators under thin facesheet**

    - **Larry Craig to present today**

  - **Investigated coatings/coating stresses for glass facesheet.**

    - **Coating stress due to deposition has shown negligible so far.**

    - **Coating stress due to Bimetallic deformation may be significant.**

    - **Have initiated activity with OCLI to support coating investigation.**

- Work in-progress
  - Investigating CTE variations across the Beryllium mirror
    - Delta temperature effects
    - Spacing variations
  - Complete remainder of thermal and structural results on current glass design.
  - Continuing to investigate coating stresses and ways to alleviate coating issues.
- Near term to do
  - Complete and sent out initial glass FEM and thermal analysis
  - Evaluate COI type design
  - Complete evaluation of alternate glass design
  - Generate tolerance budget for overall OTA
  - Continue other analytical investigations(FEM, stresses,etc.)

Next Generation Space Telescope (NGST) Quarterly Review

Structural Analysis

Oct 9, 1997

NGST Structural Analysis Quarterly Review

- Developed Optical Telescope Assembly (OTA) NASTRAN model with fused silica primary mirror
- Model has 3373 grid points and 5457 elements (QUAD4, TRIA3, BAR, RBE2)
- 1G gravity static (along optical axis) and modal analysis has been performed

NGST Structural Analysis Quarterly Review

- Performed design study to determine mods to existing secondary mirror mast to raise fundamental bending
- Developed hexapod secondary mirror support and performed modal analysis study

Remainder of Larry Craig Charts